

# **WALINGA<sup>®</sup> INC.**



**BLOWER REPAIR & MAINTENANCE  
MANUAL FOR CHROME BLOWERS  
MODELS: 510 & 614**



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Blower Repair & Maintenance Manual  
for 510 & 614 Blowers

#34-05198-6 v1.2 11.2014

Printed In Canada

Issue Date: November, 2015

# LONG-LIFE SERVICE

Although WALINGA blowers are sturdy, precision-engineered machines, there are several relatively simple but basic installation and maintenance procedures that must be observed to assure optimum performance.

It is the purpose of this manual to help you properly install, maintain and service your WALINGA blower; follow the instructions carefully and you will be rewarded with long-life service.

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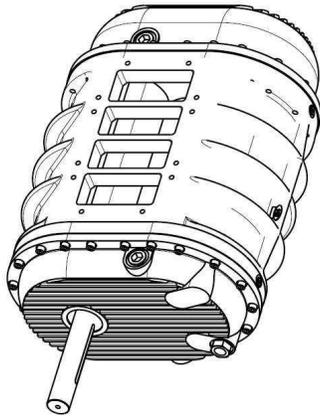
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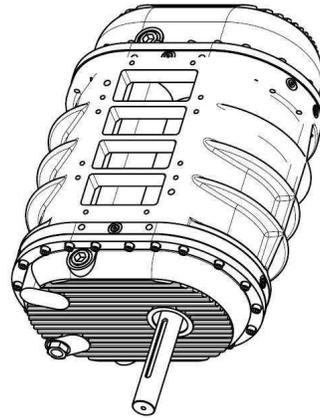
# Walinga Chrome Blowers

## Right-Hand-Drive Option

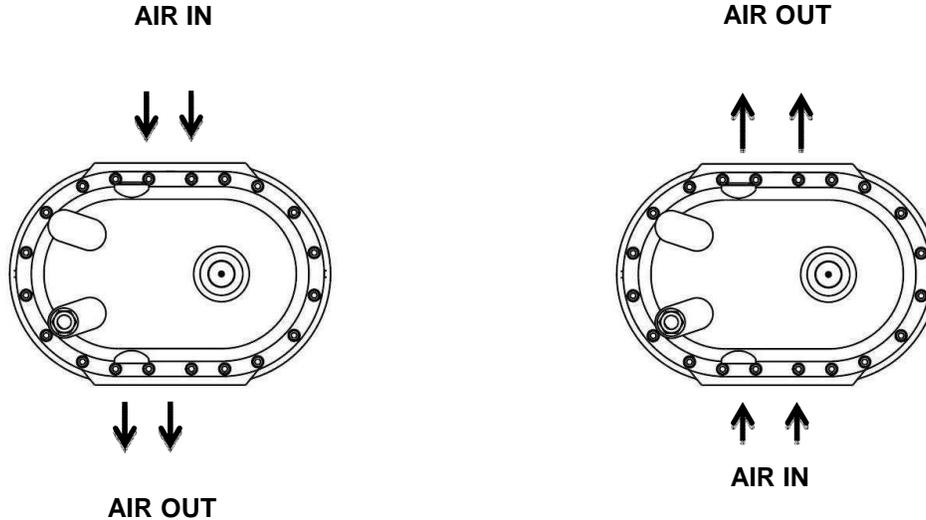
The standard shaft position on Walinga Super Chrome Blowers is at the left-hand side when viewed from the drive end. A right hand drive conversion is available to suit specific applications. Walinga or a trained dealer must be consulted prior to installation or perform this conversion to ensure that the warranty coverage is not voided. *Note that direction of air-flow through the blower will be the reverse of a standard blower.*



**LEFT HAND DRIVE  
(STANDARD)**



**RIGHT HAND DRIVE  
(OPTION)**



**Walinga Blowers feature in-house internal chrome hardened components to increase blower life by up to three times!**

# SPECIAL FEATURES OF WALINGA BLOWERS

## OPERATION

Refer to Figure 1. Rotary positive displacement design incorporates the use of two figure eight impellers which rotate in opposite directions to deliver a metered volume of air. The impellers are separated by minute clearances which are designed into the unit. These clearances are maintained by timing gears.



Fig. 1

## CONSTRUCTION

Walinga blowers are ruggedly built for long life. Impellers are dynamically balanced to operate without vibration. Large alloy steel shafts are ground and polished. Bearings are heavy duty anti-friction type which enable the blower to maintain its original factory clearances. Bearings are protected from dirt and contamination by oil seals. Precision, steel, helical gears are oil lubricated by a completely self-contained splash system which atomizes the oil. Breathers are provided to prevent the air from being contaminated by the blower lubricant.



Fig. 2

## TYPES OF DRIVE

**Direct:** Locked bearings on both impeller shafts enable the blowers to be direct connected. The entire line is also available with flange adaptors and couplings for direct connection to internal combustion engines as used on WALINGA Trailers and Transfer Units. (See Figure 2). In addition, WALINGA blowers are available as power take off (PTO) units with gear heads in a selection of ratios to approximately 2.25:1.

**V-belt:** Walinga blowers can be V-belt driven to permit changes of speed to accommodate variations in operation requirements. (See Figure 3)



Fig. 3

## SPECIAL FEATURES OF WALINGA BLOWERS - CONT'D RELIEF VALVES



**Fig. 4**

**VACUUM RELIEF VALVE**, spring loaded type.

Built in 1-1/2", 3", 4", and 6" sizes (Figure 4).



**Fig. 5**

**PRESSURE RELIEF VALVE**, spring loaded type (Figure 5).

Both valves are supplied as standard equipment.



**Fig. 6**

### TIMING GEARS

Walinga units are fitted with precision steel helical gears and the exclusive WALINGA TIMING HUB which enables the user to easily retime the unit in the field and has great shock absorbing qualities (Figure 6).



**Fig. 7**

### MUFFLER

To minimize sound level with little pressure drop, space and weight saving packaged-type mufflers are supplied

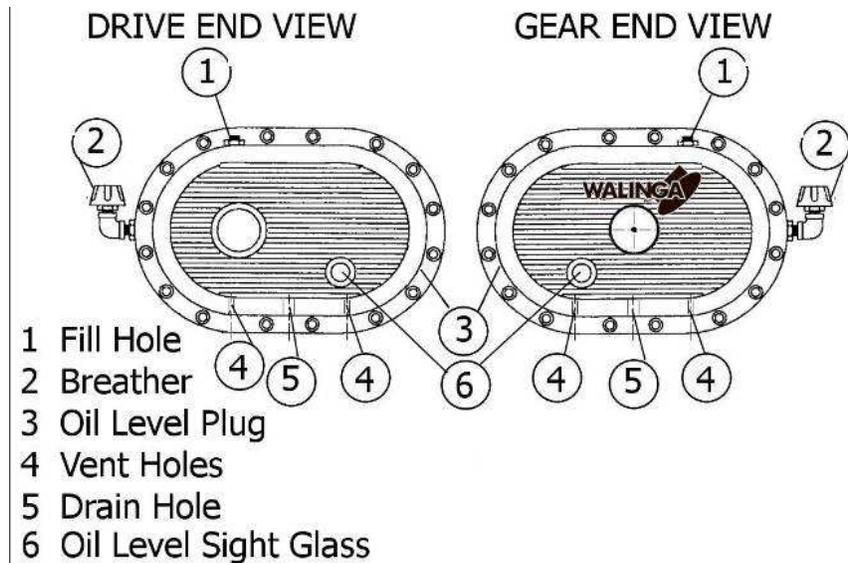
(Figure 7).

# SECTION ONE:

## LUBRICATION

Anti-friction bearings and precision, steel helical gears are oil lubricated by a completely self-contained splash system which atomizes the oil. No external oil feed systems or coolers are required.

Units are shipped with oil in the gear case or bearing housing. Do not operate before checking lubrication. The vent and oil level plug arrangement are shown in figure 8. Remove the oil fill plug from the fill hole at the top of the cover and the plug from the oil level hole located at the side of the headplate. Fill the housings until oil drips out of the oil level hole. Do not overfill. \* Replace both plugs. Use **Walinga Super Duty Blower Oil (Walinga Part# 98-13813-5)** In most cases, operating temperature of the blower will be in the 100-250 Deg. F. range. Normally the gear case should be drained, flushed, and refilled every **100 hours or annually**. If inspection indicated it is necessary, do at shorter intervals. The oil level should be checked daily.



**Fig.8** *Blower Schematics*

\* On units equipped with sight glass, check to be sure that oil levels registers a quarter of the sight glass.

**Table 1**

BLOWER MODEL #	FRONT	REAR
510	1.14 (1.20)	1.40 (1.50)
614	1.40 (1.50)	2.50 (2.60)

## OIL CAPACITY LITERS (US QUARTS)

**SPECIAL NOTE:** As a result of blower operating temperatures, condensation can occur and result in water formation in the lubricating oil reservoir. It is important that any water accumulation be eliminated, in order to ensure proper lubrication and long life.

**Allow blower to cool down before driving away to prevent condensation and freeze up in cold weather.**

## SECTION TWO:

### MAINTENANCE-RETIMING

#### RETIMING

Aside from lubrication covered in Section One, the only maintenance procedure which may arise and needs explanation in the manual is the retiming of WALINGA blowers. Originally, the impellers are separated by pre-determined minute clearances which are designed into the unit. These clearances are maintained by the timing gears. Any malfunction which disrupts this clearance must be corrected and the unit must be retimed.

Retiming is necessary to reset impeller clearance after a blower has been jammed and the removal of the foreign material does not stop the knocking or pounding during operation.

#### GEAR CASE REMOVAL

The Gear case is secured to the headplate with socket head cap screws. (Figure 9) Drain oil from gear case and remove bolts. Lift gear case away from headplate. Timing gears and gear end bearings are now exposed. (Figure 10) On completion of maintenance work, be certain that gear case is resorted to original position, with the oil-fill port up. Replace gasket or use a paste-type gasket compound on the mating surfaces. Always relubricate before starting.

#### INLET AND OUTLET HOUSING REMOVAL

WALINGA blowers are equipped with housing for channelling air into the transmission lines. To expose the impeller chamber, remove the bolts connecting the housing to the impeller cases and headplates, and remove. Before housing is installed, after completing internal work, inspect housing gasket. Replace if necessary



Fig. 9

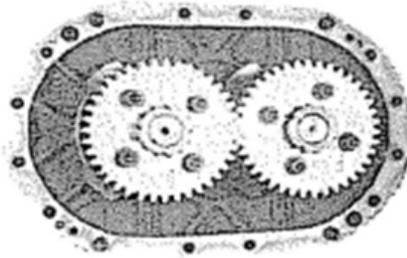


Fig. 10



Fig. 11

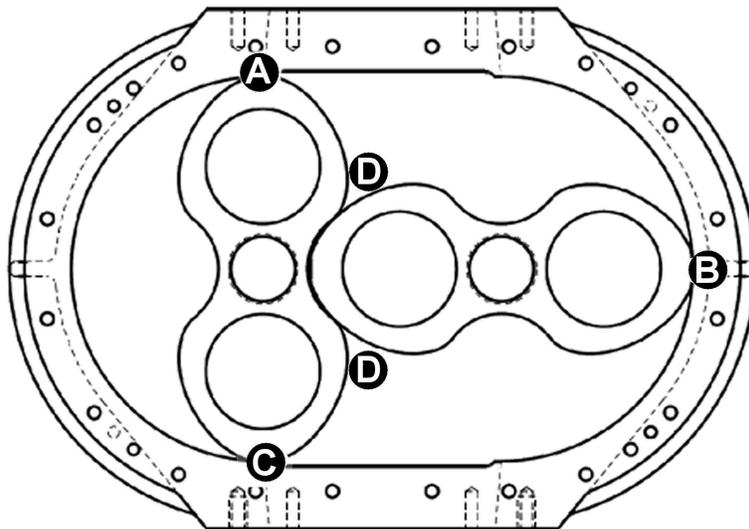
## DETERMINING PROPER IMPELLER CLEARANCE

The timing of a blower is the setting of one impeller with respect to the other so they do not touch during operation. The clearances between the impellers are measured at points o-o and c-c when the impellers are in the positions shown in the Fig. 12 below. Note that the impellers are shown viewed from the drive end of the blower; always face the drive shaft end when determining clearance.

**Table 2**

CLEARANCES FOR IMPELLERS INCHES				
GUELPH SERIES	TIMING CLEARANCE	TIP CLEARANCE	END CLEARANCE - SHAFT END	END CLEARANCE - GEAR END
510	.009 MIN.	TOP: .008 MIN. MID: .005 MIN. BOT: .004 MIN.	.009 MIN.	.005 MIN.
614	.011 MIN.	TOP: .013 MIN. MID: .008 MIN. BOT: .005 MIN.	.012 MIN.	.005 MIN.
Denoted Below	D	TOP: A MID: B BOT: C	F	G

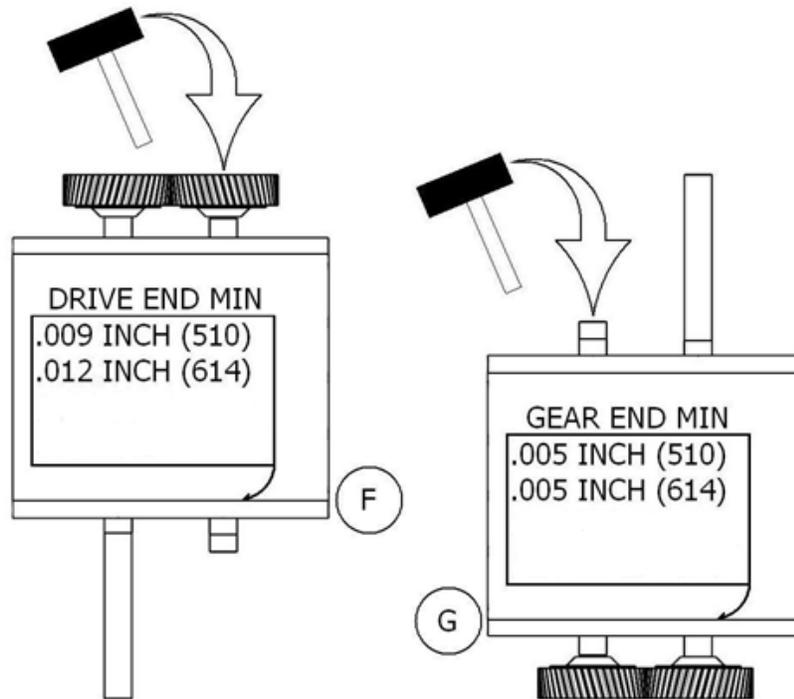
**Attention:** The timing and tip clearances are very important. Maintaining proper clearances will prevent damage to the impellers and will ensure maximum performance.



**Fig. 12** *Impeller Clearances*

## DETERMINING PROPER IMPELLER CLEARANCE (con't)

The following drawing illustrates how to check the minimum end clearances at the drive and gear end of the blower. The hammer is used to ensure that the play that is inherent in the spherical bearings is to the appropriate side and the clearance measurement is truly a minimum clearance measurement. Once again this minimum spec should be taken at the tightest point. This means that when the shims and cartridges are tightened into place and each impeller is hit down toward the drive end that (for a 614 blower) a .012 in feeler gauge should slide through with no more tension than the standard feeler gauge test everywhere between the headplate and impellers.



**Fig. 13** *Checking Minimum End Clearances*

## RESETTING IMPELLER CLEARANCES

Refer to Figure 14 below.

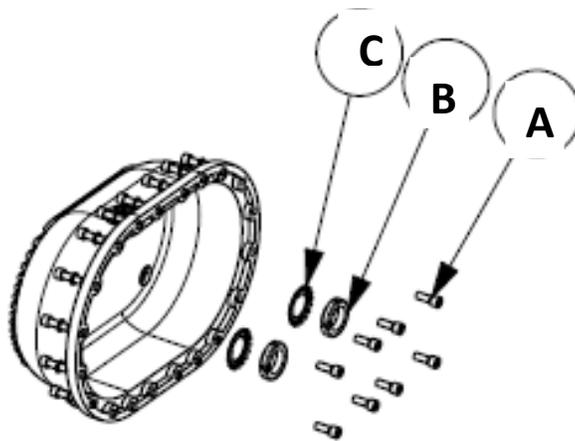
Impellers are held in time by gears which are bolted to a timing hub, which in turn is secured to the serrated impeller shaft by a lock nut. The timing gears can be rotated in relation to the hub by loosening the cap screws. Because the cap screw holes in the gear are oversized, the gear hub will rotate – within limits – when the screws are loosened.

To retime, loosen the four cap screws (**A**) to locknut (**B**), and the lock washer (**C**) in one gear only. Wedge the two impellers together against the exact amount of shim stock required to establish proper clearances as calculated in the preceding sub-section: "Determining Proper Impeller Clearances." Secure the gear in new position with cap screws (but do not tighten) and rotate impellers by hand. Recheck clearances. If proper timing has been re-established, tighten cap screws with a torque wrench (refer to accompanying chart for correct values). Tighten lock washer and locknut.

Install gear case (See Gear Case Removal subsection) and re-lubricate.

**Table 3**

TORQUE VALUES	
5" Gear	6" Gear
42 FT. LBS.	55 FT. LBS.



**Fig. 14**

## ASSEMBLY AND DISASSEMBLY OF BLOWER

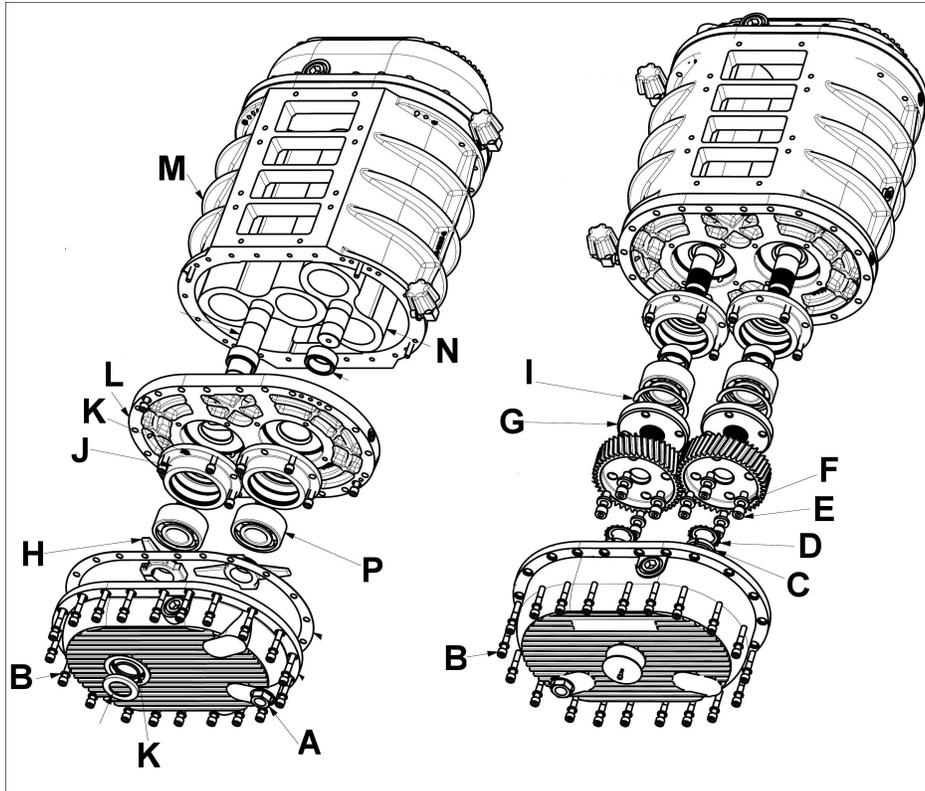


Fig 15

### DISASSEMBLY OF BLOWER

STEP	PROCEDURE
1	Drain oil from front and rear covers. (A)
2	Unbolt covers by removing all exposed socket head cap screws. (B)
3	Remove locknuts (C) lockwashers (D) from shaft on gear end of blower.
4	Remove bolts (E) and washers (F) from timing gears, match the timing gears and lift them off of the hubs. (G)
5	To remove timing hubs and cartridges install two long 5/16" bolts in the threaded holes in each cartridge. Pull cartridge and timing hubs off of the shafts by evenly turning down the long 5/16" bolts.
6	Remove the oil slingers (H).
7	Follow step 5 for removal of front cartridges.

## Disassembly of Blower (con't)

STEP	PROCEDURE
8	Remove retainer rings (I) from gear end bearing cartridges and remove bearings (P) from cartridges
9	Remove seals (J) and O-rings (K) in cartridges.
10	Mark position of headplate (L) to housing (M). Remove the two counter-sunk head capscrews and the two dowel pins from each headplate.
11	Remove one headplate (L).
12	Mark the position of the long impeller (N) in the housing and slide impeller out of housing. Remove the other headplate (L)
13	Clean all parts and inspect all parts for wear or damage.

## ASSEMBLY OF BLOWER

STEP	PROCEDURE
1	Set housing on work bench with the casting number (510G) on the right had side and up.
2	Install the headplate on the end facing. If sameheadplate is used install 2 – 5/16” dowel pins and two – 3/8” X 1” socket cap screws in counter sunk holes, also 4 – 3/8” X 1 – 3/4” sockethead capscrews evenly spaced. (Do not tighten completely) (Make sure the ventholes in headplate are pointing down.)
3	Turn the casing around and return the impellers in housing as marked (Re: step 12 of Disassembly)
4	Install the other headplate doing the same as (Step 3).
5	Check bearings for wear and damage. Replace where required.
6	Install new seals and O-rings in cartridges. Return bearings to cartridges. Make sure the bearings stick slightly out of the cartridge, approximately 1/8”. Reinstall retainer rings using new 10 – 24 X 1/2” nylock socket head capscrews, on gear end cartridges only.
7	Lubricate cartridge pockets in the headplates and the shaft sleeves where the seals and O-rings fit with oil.

## ASSEMBLY OF BLOWER (con't)

STEP	PROCEDURE
8	Drive cartridge onto shafts with a driver, make sure the cartridges with the retainer rings are on the splined end of the shafts.
9	At this time only the cartridges on the front of (drive end) the blower are to be bolted down using 5/16" X 1" nylock socket head capscrews.
10	Cut two pieces of pipe* 1-1/2" long 1-3/8" O.D. to fit over splined end of shaft and long enough to allow end lock nut to be put on. Tighten locknuts to hold bearing tight on shaft. *(Used for assembly purpose only.)
11	Install two long bolts in threaded holes in rear cartridges. (Do not tighten) Make sure threaded holes run from left bottom to right top when blower is lying flat. This is to allow shims to clear bolts.
12	Check clearance between the impeller and the housing by sliding a feeler gauge between impeller and housing, and rotate impeller in casing, doing so at all four corners, top and bottom. Impellers have to be centered in housing with not less than .007" clearance. If improper clearance cannot be achieved remove the dowel pins and follow step 13 and 14.
13	If new headplates or new housing are used adjust the headplates by tabbing them from side to side and up and down until centered in housing with not less than .077" clearance.
14	Tighten the four capscrews in each headplate and check clearances again, if they are satisfactory drill and ream new holes for the 5/16" dowel pins, these pins are press fitted.
15	After impeller to housing clearances are set, tighten the two long bolts in the cartridges lifting the cartridges away from the headplate.
16	Slide shim between cartridges, approximately 0.015" less than clearance between flange of the cartridge and headplate. Make sure the same thickness of shims are used on each side of each cartridge. Loosen the long bolts in the cartridges and bolt the cartridges to the headplate.
17	Check with a feeler gauge inside at the gear end between each impeller and headplate, it must have 0.008" clearance. If the clearance is not 0.008" adjust by adding or removing shims. When the gear end is adjusted, check clearance on drive end of blower to be not less than 0.012". If it is less than 0.012" a gasket has to be installed between the headplate and the housing.
18	Once the clearances have been set between the impellers and endplates remove the two long bolts from each cartridge and install <b>new</b> 5/16" X 1" nylock capscrews to bolt cartridge to headplate.

## Assembly of Blower (con't)

STEP	PROCEDURE
19	Remove the locknuts and the pipe used in step 9 from the shaft and put the impellers in 45° position 88, top side of impeller touching bottom side of other impeller. In this position slide a 0.010" -0.012" feeler gauge between the impellers.
20	Lay the timing hubs loose on the shafts so that the splines just start on the shaft splines. Lay the timing gears on the hubs lining up the bolt holes on the gears with those on the hubs. Draw a line across both gears and shaft ends. Mark gears and shaft ends 1 – 2 and take gears off, draw a line across hubs lining up with the line on the shafts, mark hubs 1 – 2 (same as the gears). Heat up the timing hubs and drive on splined shafts (Make sure the lines previously marked line up).
21	Lay the timing gears on the hubs making sure that the lines line up, and bolt them on with 3/8" X 1-1/4" socket head capscrews and timing washers. Hold the impellers together with 0.010" feeler gauge in between while installing the bolts.
22	Rotate the impellers while holding a 0.010" – 0.012" feeling gauge between center of impellers. The feeler gauge should slide through evenly while rotating impellers in either direction. If there is a tight spot while rotating the impellers, loosen the timing bolts until finger tight and tap on gear carefully using an aluminum bar and hammer to shift the position of the gear on the hub.
23	After the timing has been set install <b>lockwashers</b> (new) and <b>locknuts</b> on gears.
24	Tighten the timing bolts until they sink into the washers. Install two oil slingers at front of blower and O-ring on the long shaft above the oil slinger.
25	Recheck all clearances and if satisfactory reinstall front and rear covers using new gaskets. <b>Make sure input seal hole</b> in the front cover is <b>centered</b> around the shaft. Install new seal .
26	Fill blower with oil up to its proper level and follow start-up check list.

## SECTION THREE:

### REPAIR AND REPLACEMENT

With proper maintenance and lubrication, normal life of bearings, gears and seals can be expected. To maintain the efficiency of your unit, however, these parts must be repaired or replaced when required.

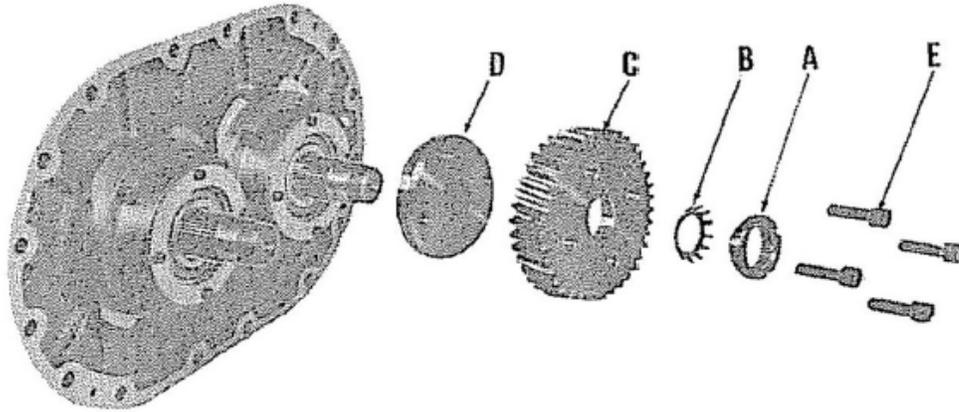


Fig. 16

#### TIMING GEAR AND HUB REMOVAL

1. Remove the gear case (Refer to Gear Case Removal subsection).
2. Remove the lock nuts (A) and lock washers (B) from both shafts. Match-mark the shafts, gears and hubs to assure proper repositioning on completion of maintenance work. We recommend gears be replaced in sets only.
3. If maintenance work does not require detachment of gears from the timing hubs, these subassemblies should be withdrawn from their respective serrated shafts simultaneously. On completion of maintenance work, the return of the gear-hub sub-assemblies to their matched-marked positions will eliminate the need for retiming.
4. If gears must be detached from the timing hubs during repair work it is important that the unit be retimed, To separate gears (C) from hubs (D), remove four cap screws (E) from each assembly.
5. To reassemble, snug up but do not tighten bolts which hold gears to hubs and restore to their respective shafts. Replace – but do not tighten – the lockwashers and nuts to each shaft. Establish a position for one shaft and tighten the bolts, lockwashers and nut on that shaft only. Then proceed with retiming in accordance with instructions outlined in “Resetting Impeller Clearances”. Tighten the lockwashers and nuts and use a torque wrench to tighten the cap screws on the timing hub. Replace the gear case and follow “Blower Start-up Checklist”

## GEAR END BEARING AND SEAL REPLACEMENT

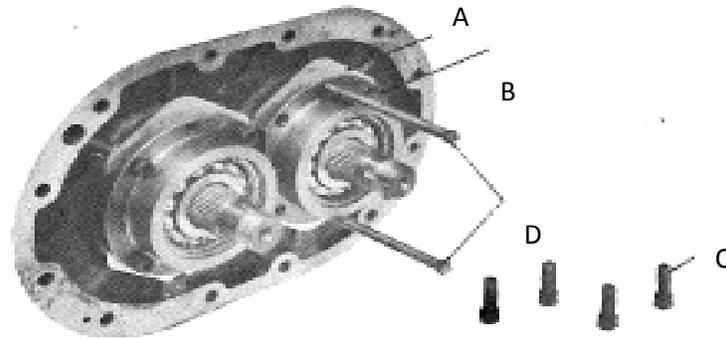


Fig. 17

1. Remove gear case (refer to Gear Case removal subsection). Check the fixed end impeller clearance. This clearance must be duplicated when repairs are completed. Remove the lock nuts and washers from the ends of both shafts and match mark the shafts, gears and hubs to assure repositioning during reassembly... this is important. Remove gears and hubs simultaneously. In some cases, a gear puller might be necessary in this operation.
2. Refer to figure 16. If shim spacers (A) were added during production, they will now be exposed behind the bearing cartridge (B) on the gear end of the unit. The spacers have been installed to assure accurate positioning of the impellers between the headplates; hence, it is important that they be returned to their exact positions on reassembly. Accordingly, match mark the spacers at this point and be prepared to detach them on removing the four socket head cap screws (C) which hold the bearing cartridge in position. After this has been accomplished insert two long bolts (D) as indicated and tighten against the headplate, applying equal turns to each bolt to assure an even withdrawal of the cartridge. Detach the cartridge and remove the bearing retaining ring from the face of the cartridge.
3. A seal is located behind each bearing fit. Whenever a cartridge is removed for repair purposes, always install a new seal before reassembly. This can best be accomplished by using a driving instrument having the same approximate O.D. as the seal; use normal precautions not to damage the new seal during installation.
4. On completion of repair or replacement work, return the bearing cartridges to their respective shafts and restore the shim spacers to their original positions, using the match marks as guides. Extreme care must be taken to avoid damaging the sealing elements when they are moved over the shafts. It is good practice to wrap a piece of light shim stock around the shaft to prevent cutting or damaging of the seal on the serrated surface.
5. Return bearings and secure in position with the retaining rings. Hub and gear sub-assemblies must be replaced simultaneously according to match marks made during disassembly. Check the fixed end clearance. If necessary, add or delete shims behind the bearing cartridge flange as needed to restore original fixed end clearance.

## BEARING AND GEAR REPLACEMENT ON GEAR HEAD UNITS

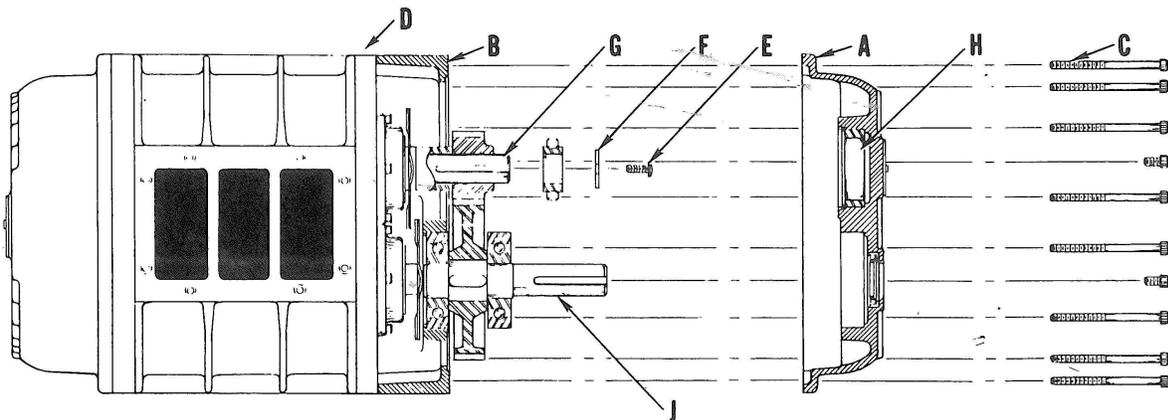


Fig. 18

When excessive wear has spent the effectiveness of any one of the three bearings and/or two gears in gear head units, it is recommended that all five components be replaced to assure optimum performance and trouble-free service. Installation of a new oil seal is recommended each time the unit is disassembled.

### DISASSEMBLY

#### STEP

#### PROCEDURE

1. Unbolt the gear box cover (A) and the adapter (B) from the impeller case by removing all exposed socket head cap screws (C). Detach the cover from the adapter. Note: At this point on some units, four socket head cap screws may be seen on the exposed end of the headplate (D). **Do not remove these screws.**
2. Remove the button head cap screw (E) and the retainer plate (F) from the impeller shaft (G).
3. **Attach a standard gear puller to the pinion gear and remove both the gear and the bearing from the impeller shaft in one operation.**
4. Withdraw the retaining ring which secures the outer race of pinion bearing (H) in the gear box cover. Use a gear puller or similar tool remove the outer race.
5. Remove the input shaft assembly (J) from the gear box adapter.
6. Use a press with a support on the gear surface to drive the input shaft out of the gear and bearing. Reverse the shaft assembly and repeat this procedure to press the shaft out of the other bearing.
7. Remove the oil seal by drifting it out of the gear box cover.

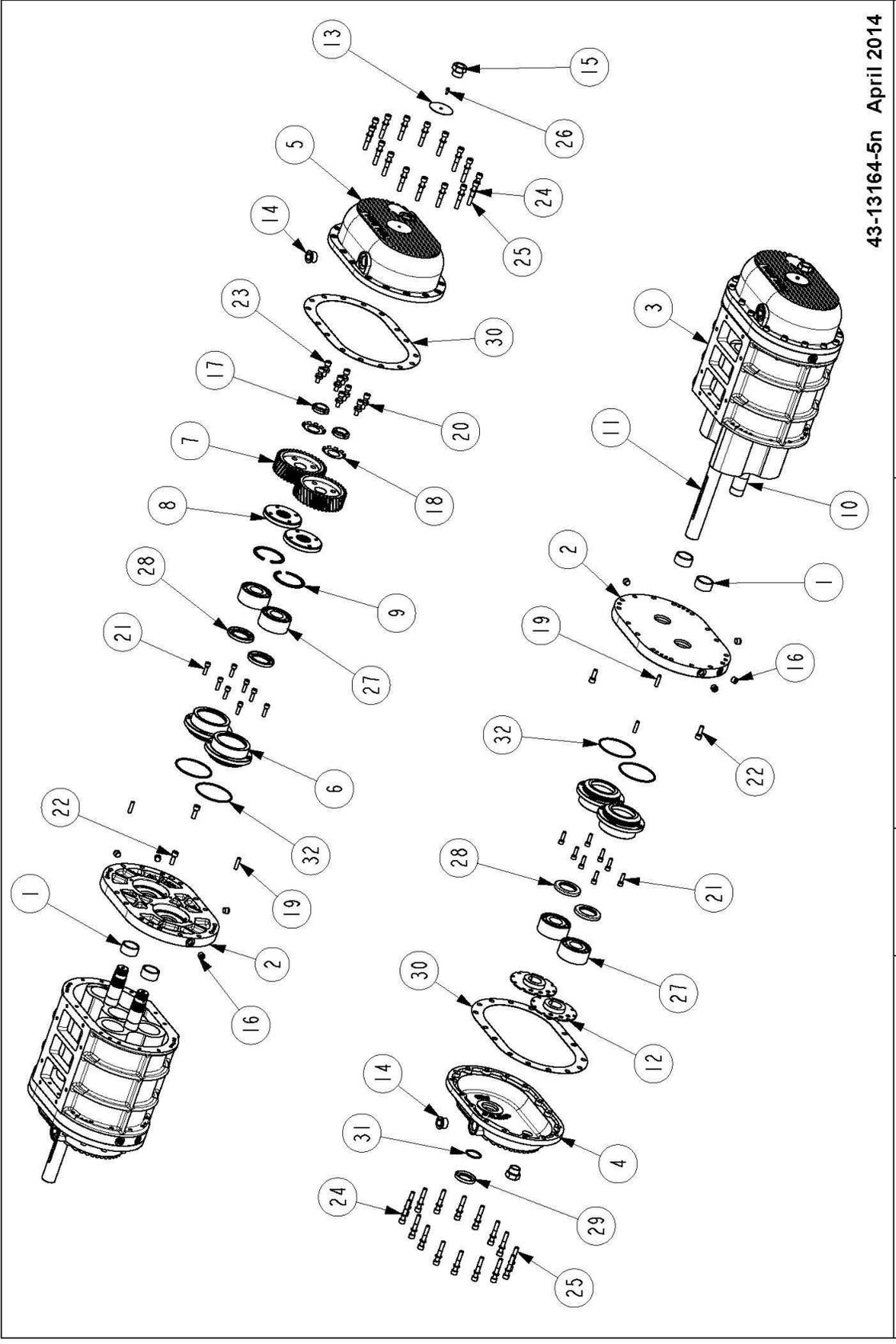
## Bearing and Gear Replacement on Gear Head Units (con't)

### ASSEMBLY

STEP	PROCEDURE
1.	Coat the input shaft and drive shaft with white lead. Oil all other components.
2.	Replace the key on the input shaft. Press (or drive with a lead hammer) the gear into the input shaft until it is centered on the shaft step.
3.	Replace both bearings on the shaft to their respective positions on either side of the gear. This step is facilitated by placing a mating sleeve over the O.D. of the shaft and carefully driving the bearings into position.
4.	Drive the outer race of the pinion gear bearing into its seat in the gear box cover and replace the retaining ring.
5.	Replace the key on the impeller shaft and press (or drive with a lead hammer) the pinion gear onto the shaft until it is seated against the spacer.
6.	Drive the inner race of the pinion gear bearing onto the impeller shaft.
7.	Replace the retaining plate and the button head cap screw on the end of the impeller shaft.
8.	Coat the mating flanges of the gear box cover, gear box adapter and headplate with liquid gasket cement.
9.	Place the blower in a vertical position and set the gear box adapter into place.
10.	Install the input shaft assembly into the gear box adapter.
11.	Install a new oil seal in the gear box cover.
12.	Place a piece of shim stock around the input shaft to avoid damaging the oil seal
13.	Place the gearbox on the adapter. Use caution to avoid damaging the oil seal or gears.
14.	Replace all cap screws.

## PARTS DESCRIPTION

510 BLOWER (refer to following page)			
ITEM	QTY	PART NO	DESCRIPTION
1	4	43-00146-4	Shaft Sleeve 506, 510
2	2	43-09772-5	Headplate Assembly, 510, Chrome
3	1	43-09858-4	Casing, 510, Chrome
4	1	43-09858-4	5" Drive Cover Machined
5	1	43-09933-4	5" Gear Cover Machined
6	4	43-09949-4	Bearing Cartridge, 510, Machined
7	1	43-13000-6	Timing Gear Set 510 1.500 Width
8	2	43-13528-4	Timing Hub 510
9	2	43-15982-6	Retaining Ring, 510 Brg Ctg 5002-315
10	1	43-36849-5	Impeller 510 17" Chrome w/o Sleeves
11	1	43-36850-5	Impeller 510 25"Chr w/o Sleeves
12	2	43-96067-5	Oil Slinger, 510
13	1	53-04617-6	Serial Plate, 510 Blower
14	2	58-19689-6	Adapter – Plug 12MB
15	2	58-19696-6	Plug, 12MB, W/Sight window
16	8	58-80675-6	Plug, 6MB, W/Magnet
17	2	94-00139-6	Locknut, N-06
18	2	94-00140-6	Lockwasher, W-06
19	4	94-00170-6	Dowel Pin 5/16 X 1 ¼
20	8	94-00171-6	Timing Washer 510 .750 OD X .40 ID
21	16	94-00176-6	SK HD Cap Screw 5/16 – 18 – 1 Nyl
22	4	94-00179-6	SK HD Cap Screw 3/8 – 16 – 1
23	8	94-00180-6	SK HD Cap Screw 3/8 – 16- 1 ¼
24	32	94-07268-6	Plate Washer, Soft, .404 X .625 X .060
25	32	94-14069-6	SK HD Cap Screw 3/8 – 16 – 2 ¼
26	1	94-14179-6	MS 10 - 32 - 1/2 Pan Hd Plt
27	4	96-00158-6	Bearing, 3307, C3
28	4	96-00161-6	Seal, 1.750 Shaft, CR17558
29	1	96-00162-6	Seal, 1.375 Shaft, CRr13661
30	2	96-02149-6	Oil Cover Gasket, 510
31	1	96-04822-6	O-Ring 2-220 N70
32	4	96-04828-6	O-Ring 2-239 V75
33	2.600	98-19152-6	Oil, Synthetic, Blower, Synduro SHB4



43-13164-5n April 2014

**510 Blower Exploded View, Chrome 7.25"**

## TROUBLE SHOOTING

The function of trouble shooting is to locate quickly and to correct the cause of faulty operation and failure of equipment. No matter how well equipment is designed and manufactured, there may be times when faults will develop and failures will occur during operation.

Whenever equipment fails to operate satisfactorily, the operator or repairman must be able to locate the cause and correct the trouble as quickly as possible. The trouble chart below is provided to assist in recognizing the cause of common faults and in correcting them quickly.

<b>Problem</b>	<b>Possible Causes</b>	<b>Solution</b>
Knocking	Unit out of time	Retime
	Distortion due to improper mounting or pipe strains	Check mounting alignment and relieve pipe strains
	Excessive pressure differential	Check manufacturer's recommended pressure, check relief valves
	Worn timing gears caused by improper lubrication or overloading	Replace timing gears
Knocking in open and/or closed position	Worn bearings	New bearings
	Worn bearing cartridges	Replace cartridges
Broken Shaft	Excessive overhung load	Replace shaft and recheck drive for overhung loads
Excessive Heating	Too much oil in gear case	Check oil level
	Incorrect speed to pressure ratio	Check ratio
	Gear case not properly vented	Clean vents
Excessive heating or motor overloading	Clogged filter or muffler, incorrect installation of checkvalves	Remove cause of obstruction
	Excessive line loss (Pressure)	Check pressure differential directly across blower
Sudden motor overloading	Excessive pressure in the system	Check valves and line for plugging

## TROUBLE SHOOTING (con't)

Problem	Possible Causes	Solution
Freezing-Headplate overheating, excessive end clearance wear.	Misaligned V drive	Align V drive
Lack of Volume	Clogged filter or muffler, incorrect installation of check valves	Remove cause of obstruction
Excess bearing or gear wear	Improper lubrications	Correct oil level – dirty oil – check for obstructions in the oil lines and strainer in force feed units
Excessive gear wear	Oil too light	Use recommended weight of oil
Lack of oil pressure on the force feed units  Poor Performance	Dirty suction screen  Restricted inlet  Downstream restriction  Excessive air to product ratio  Air leakage  Insufficient blower speed  Excessive impeller clearance	Clean suction screen  Remove cause of restriction  Remove cause of restriction  Reduce air intake  Check and repair any faulty seals  Increase to proper R.P.M.  Check clearances and replace worn components

# ROTARY POSITIVE BLOWERS INSTALLATION AND LUBRICATION

## BLOWER STARTUP CHECKLIST

This start-up procedure should be followed during initial installation and after any shutdown period or after the blower has been worked on or moved to a new location. It is suggested that the steps be followed in sequence and checked off ( ✓ ) in the boxes provided.

1. Check the unit and all piping for foreign material and clean if required.

2. Check the level and alignment of the drive. Misaligned V-drives can cause the impellers to rub against the headplates and cause a reduction in the volumetric efficiency of the unit. Misaligned couplings can ruin bearings.

3. Check the unit for proper lubrication. Proper oil level cannot be overemphasized. Too little oil will ruin bearings and gears. Too much oil will cause overheating and can ruin gears and cause other damage.

4. Turn the unit over by hand to be certain it does not bind.

5. "Jog" the unit with the motor a few times to check rotation and to be certain it turns freely and smoothly.

6. Start the unit and operate for 15 minutes at no load. During this time, check for hot spots and other indications of interference. If minor hot spots occur, introduce a small amount of lubricating oil into the blower inlet while it is operating. Repeat until hotspots disappear. Once hot spots have been removed, it is unnecessary to lubricate the impeller chamber for proper performance.

7. Apply the load and observe the operation of the unit for one hour. Check frequently during the first day of operation

8. If malfunctions occur, do not continue to operate. Minor problems, such as knocking impellers, can cause serious damage if the unit is operated without correction.

9. Fill in and return warranty card.

## CAUTION - WHENEVER REMOUNTING BLOWER BE SURE THAT:

1. **Fig. 19 Belt Tensioning.** Remove support lugs **C** (where supplied).
2. Position blower on mounting plate, making sure that the Blower shaft and the midship shaft are and remain **parallel**.
3. Tighten the eight blower mounting bolts properly.
4. Lay the V-Belts loosely in the pulleys.
5. Install bearing and plate **F** on the Blower shaft **A**.
6. **CAUTION:** During this step make sure that all three bearings on the blower input shaft **A** are in line with one another. **Fig.20 Bearing Alignment**  
It is important that:
  - (i) Lugs **C** have been removed (where supplied).
  - (ii) Belts are loose and remain loose until instruction #10.
7. Place bearing support plate **F** and check the hole alignment for the mounting bolts. It is important that these bolts fit freely. If not, clean out holes with drill or file.  
**SPECIAL NOTE:** Failure to do instructions #6 and #7 could result in shaft failure, as it upsets your blower shaft alignment.
8. Tighten mounting bolts to 90 Ft. Lbs. torque.
9. Where originally supplied, place support lugs **C** tight against the bearing support plate **F** and weld them to the front of the frame.
10. Finally, the belts are allowed to be tightened by turning the hex bolt **E**. Make sure that shafts **A** and **B** remain parallel and that both pulleys are in line and parallel. Refer to the Belt Tension & Alignment Section in your Agri-Vac Operator's Manual.

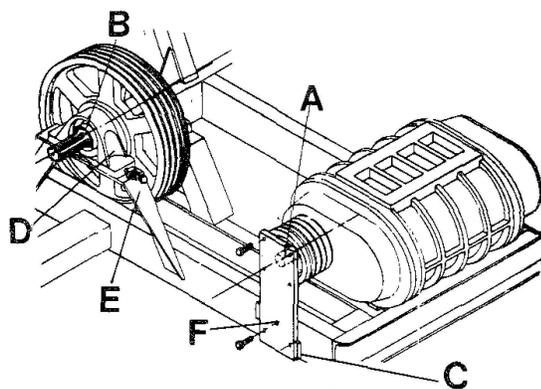


Fig.19 *Belt Tensioning*

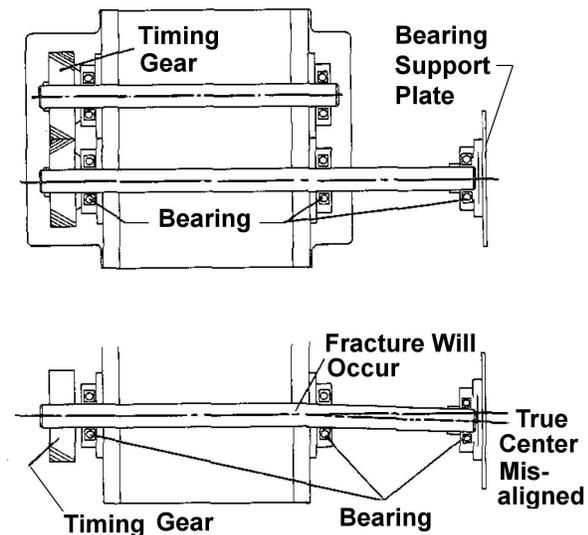
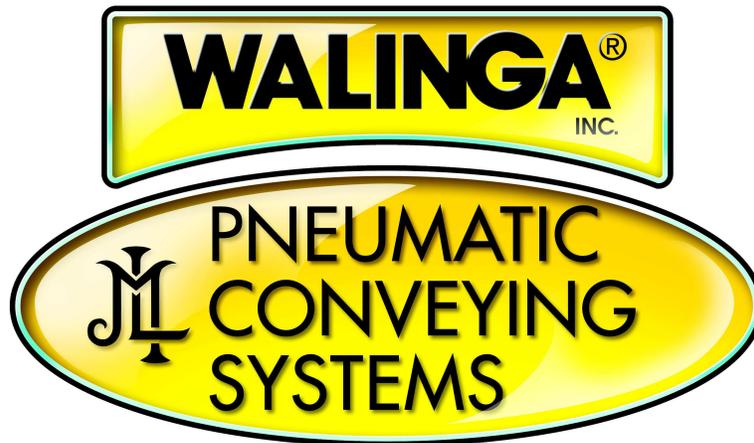


Fig.20 *Bearing Alignment*



## **BLOWER REPAIR & MAINTENANCE MANUAL FOR CHROME BLOWERS MODELS: 510 & 614**

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ISSUE DATE: November, 2014

#34-05198-6 v1.2